UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/993,522	11/27/2001	Yong Sung Ham	049128-5042	8126

30827	7590	02/22/2006

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EXAMINER
WU, XIAO MIN

ART UNIT	PAPER NUMBER
2674	

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>29 November 2005</u>.

2a) ☐ This action is **FINAL**.　　2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-21</u> is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1,2,7-10,16-18,20 and 21</u> is/are rejected.

7) ☒ Claim(s) <u>3-6,11-15 and 19</u> is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a) ☐ All　b) ☐ Some *　c) ☐ None of:

　　1. ☐ Certified copies of the priority documents have been received.

　　2. ☐ Certified copies of the priority documents have been received in Application No. _____.

　　3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
　　Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1.   A request for continued examination under 37 CFR 1.114, including the fee set forth in

37 CFR 1.17(e), was filed in this application after final rejection. Since this application is

eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e)

has been timely paid, the finality of the previous Office action has been withdrawn pursuant to

37 CFR 1.114. Applicant's submission filed on 11/29/2006 has been entered.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3.   Claims 1, 2, 7, 8-10, 16-18, 20 and 21 are rejected under 35 U.S.C. 102(b) as being

anticipated by Sawada (US Patent No. 6,078,317).

As to claim 1, Sawada discloses a method of driving a liquid crystal display, comprising:

setting reference modulated data (13, 16, Fig. 1); detecting a driving frequency of video image

data for a current frame by counting the video image data (14, 15, 17, Fig. 1); and adjusting the

reference modulated data (16, 19, 21, Fig. 1) in accordance with the detected driving frequency

to modulate the video image data (e.g. as shown in Figs. 1 and 4, the interpolation processing

circuit 16 adjusting the modulated circuit 13 based on the different frequencies such as horizontal

frequency and frequency of pixel clock).

As to claims 2, 9, Sawada discloses the reference modulated data are set (e.g. x2, x1.6 or x1.25 interpolation) based on a desired reference frequency (e.g. 31.5khz, 37.8 kHz and 48.3khz, respectively).

As to claim 7, Sawada discloses that if the input data is equal to the reference modulated data (e.g. 1280x960), no interpolation is needed.

As to claim 8, Sawada discloses a method of driving a liquid crystal display, comprising: setting reference modulated data (13, 16, Fig. 1); dividing a frequency band for each constant frequency band .(e.g. 31.5khz, 37.8 khz and 48.3khz for horizontal frequencies); setting a different weighting value for each frequency band (e.g. x2, x1.6 or x1.25 interpolation); detecting a driving frequency of video image data (15, Fig. 1); determining the frequency band including the detect driving frequency; and assigning a weighting value of the frequency band including the driving frequency to the reference modulated data to adjust the reference modulate data, thereby modulating the video image data (see Fig. 4).

As to claim 10, Sawada discloses a driving apparatus for a liquid crystal display, comprising: a mode detector (15, Fig. 1) detecting a driving frequency of current video image data; and a modulator (16, 17, Fig. 1) selecting reference modulated data from previously registered data (13, Fig. 1) and adjusting the selected reference modulated data in accordance with the detected driving frequency.

As to claims 16, 18, Sawada discloses a data driver (22, 23, Fig. 1) applying data outputted from the modulator to a liquid crystal display panel; a gate driver applying a scanning signal to the liquid crystal display panel; and a timing controller (14, 17, 100) applying the

current video image data to the modulator and the mode detector and controlling the data driver

and the gate driver.

As to claim 17, Sawada discloses a driving apparatus for a liquid crystal display,

comprising: a mode detector (15, Fig. 1) detecting a driving frequency of current video image

data; and a modulator (16, 17, Fig. 1) selecting reference modulated data from previously

registered data (13, Fig. 1), setting a different weighting value for each frequency band having a

plurality of frequency ranges (e.g. x2, x1.6 or x1.25 interpolation), and assigning a weighting

value of the frequency band including the detecting frequency to the reference modulated data

(see Fig. 4)

As to claim 20, note the discussion of claims 10 and 16 above.

As to claim 21, note the discussion of claims 17 and 18 above.

Allowable Subject Matter

4.   Claims 3-6, 11-15 and 19 are objected to as being dependent upon a rejected base claim,

but would be allowable if rewritten in independent form including all of the limitations of the

base claim and any intervening claims.

Response to Arguments

5.   Applicant's arguments filed 11/29/2005 have been fully considered but they are not

persuasive.

With respect to claims 1 2, and 7, applicant argues that Sawada do not discloses

"detecting the driving frequency of the video image data for a current frame by counting the

video image data". This argument is not persuasive. As shown in Fig. 2, Sawada clearly

discloses that LPFs 33 to 35 are low-pass filters having a high-input impedance, each of which

filters a frequency signals in corresponding to each of the horizontal frequencies of the respective

display such that three different horizontal frequencies (e.g. 31.5KHz, 37.8 KHz and 48.3KHz)

inputted from 31 can be detected, and the reference modulated data in the ADC can be adjusted

in accordance with the detected driving horizontal frequency. As shown in Fig. 5, Sawada

further discloses when the controller receives display mode information detected by an output

from the display mode detector 15 in step S1, the flow advances to step S2 to discriminate the

detected display mode. If the detected display mode is VGA mode (640X480), the flow

advances to step S3, and the controller 17 switches the selection switch 39 to select the LPF 33

and the VCO 36 in the clock generator 14, then, the controller 17 sets the frequency division

value 43 for outputting the dot clock signal 41 of 50 MHz in correspondence with the frequency

31.5 KHz of the horizontal synchronizing signal in the programmable frequency divider 40 (col.

6, lines 17-30). Thus, the frequency of 31.5 KHz of the horizontal frequency is the detected

driving frequency of the video for current frame and the cot clock signal is counting the video

image data. With respect to claims 8-10, and 16, applicant also argues that Sawada fails to teach

or suggest adjusting the reference modulated data in accordance with the detected driving

frequency, or assigning a weight value of the frequency including the driving frequency to the

reference modulated data to adjust the reference modulated data. This argument is not

persuasive. As shown in Fig. 4, Sawada clearly teaches adjusting the display data by different

factors (e.g. 2, 1.6, 1.25) of the interpolation in accordance with different input frequencies

(31.5KHz, 37.8KHz, 48.3KHz). It is believed that Sawada still meets the broadly claimed

structures.

6.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to XIAO M. WU whose telephone number is 571-272-7761. The examiner can normally be reached on 6:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, PATRICK EDOUARD, can be reached on 571-272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

x.w.

February 18, 2006
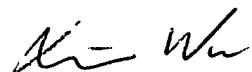
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Primary Examiner
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